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1. (Amended) Device for the pixel-by-pixel photoelectric measurement of a planar or flat measured object or object to be measured, comprising:

illumination means for illuminating the measured object or object to be measured with at least one essentially parallel light bundle at an angle of incidence of essentially 45°+/-5°;

a two dimensional array of light converter elements for producing electric signals in response to light remitted by the measured object or object to be measured;

a tele-centrical imaging optics for imaging each point of the measured object or object to be measured onto the light converter element array at essentially the same observation angle of essentially 0° and with the same aperture angle of essentially maximally 5°;

imaging means for imaging the measured object to be measured onto the two-dimensional array of light converter elements;

filters provided in the imaging light path for wavelength selective filtering of the measurement light impinging on the light converter elements;

signal processing means for processing the electrical signals produced by the light converter elements and for converting them into corresponding digital raw measured data; and

data processing means for processing of the raw measured data into image data representing colors of the individual pixels of the measured object.

2. Device according to claim 1, wherein the illumination means include an illumination lens and a light source positioned in the focal point thereof.

3 Device according to claim 2, wherein the illumination means include intensity equalisation means for producing an even illumination strength over essentially the whole illuminated surface of the measured object or object to be measured.

4. Device according to claim 3, wherein the intensity equalisation means are formed by a blend filter.

5 (Amended) Device according to claim 3, wherein the blend filter is color neutral.

6. Device according to claim 2, wherein the illumination lens is a Fresnel lens

7. (Amended) Device according to claim 6, wherein the blend filter is positioned at least one of at and on the Fresnel lens

8 Device according to claim 2, wherein the light source is a flash light source.

9. Device according to claim 1, wherein the device is a video camera and the tele-centrical imaging optics is formed by a two-dimensional image sensor of the camera having a two-dimensional converter element array, an imaging lens of the camera with an entry shutter, and a tele-lens of the camera positioned before the imaging lens, the focal point of the tele-lens being located in or close to the entry shutter

10. Device according to claim 9, wherein the tele-lens is constructed as a Fresnel lens.

11. (Amended) Device according to claim 10, wherein the video camera is a black and white camera and the filter means include a set of bandpass filters constructed as interference filters for the wavelength-selective filtering of the measuring light impinging on the light converter elements, and drive means for selectively moving the bandpass filters into the imaging light path.

12. Device according to claim 11, wherein the drive means are constructed for sequentially moving the bandpass filters into the imaging light path.

13. (Amended) Device according to claim 11, wherein about 16 bandpass filters of about 20nm bandwidth each are provided which essentially cover the spectral range of 400-700nm.

14 Device according to claim 11, wherein the bandpass filters are sequentially mounted on a rotatable filter wheel.

15 Device according to claim 1, wherein the filter means for the wavelength-selective filtering of the measuring light impinging on the light converter elements are constructed as bandpass filters positioned directly onto the light converter elements.

16. Device according to claim 9, including several video cameras each with a two-dimensional image sensor and an imaging lens with an entry shutter, whereby each video camera is constructed for the measurement of a different wavelength range and the video cameras are positioned such that their entry shutter is located in or close to the focal point of the tele-lens

17. Device according to claim 16, wherein each video camera is constructed for the measurement of a different wavelength range by the inclusion of upstream bandpass filters.

18 Device according to claim 9, including several two-dimensional image sensors and further comprising in the light path of the imaging optics a colour-selective beam splitter arrangement for directing respectively one spectral range of the measuring light onto one of the image sensors.

19. (Amended) Device according to claim 18, wherein the color-selective beam splitter arrangement splits the measuring light into about 16 spectral ranges of about 20nm bandwidth each, which essentially cover the spectral range of 400-700nm.

20. Device according to claim 18, further comprising three semi-transparent mirrors for the splitting of the measuring light into four equal channels and three colour-selective beam splitters in each channel which divide the channel into four spectral ranges.

21. Device according to claim 20, further comprising bandpass filters of about 20nm bandwidth each which are positioned after the colour-selective beam splitters and together essentially cover the spectral range of 400-700nm.

22. Device according to claim 20, wherein the semi-transparent mirrors, the colour-selective beam splitters and the image sensors are positioned on the interfaces of laminated glass prisms.

23 Device according to claim 22, wherein the bandpass filters are also positioned on the interfaces of the laminated glass prisms

24. Device according to claim 1, wherein the data processing means is constructed for carrying out a geometry correction for compensating the geometric distortions generated by the imaging means.

25. Device according to claim 24, wherein the data processing means include a correction table in which are stored for each image point the position deviations relative to a nominal position determined by way of a test image, and wherein the data processing means is constructed for correcting the position of each image point on the basis of the position deviations stored in the correction table.

26. Device according to claim 25, wherein in the correction table the same position deviations are respectively associated with a small region of adjacent image points.

27. Device according to claim 1, wherein the data processing means is constructed for carrying out a reflex correction for reducing reflection effects.

28. Device according to claim 27, wherein the data processing means is constructed for calculating a point-symmetrical reflection image from the measured data of the measured object and subtracting the same pixel-by-pixel form the measured data of the measured object.

29. Device according to claim 28, wherein the data processing means is constructed for carrying out the calculation of the reflection image at a lower resolution than that of the measured data

30. Device according to claim 1, wherein the data processing means is constructed for carrying out a scattered light correction for reducing scattered light effects

31. Device according to claim 30, wherein the data processing means is constructed for limiting the scattered light correction to selectable regions of the measured object

32. Device according to claim 30, wherein the data processing means is constructed for calculating from the measured data of the measured object a scattered light image and subtracting the same pixel-by-pixel form the measured data of the measured object.

33. Device according to claim 32, wherein the data processing means is constructed for carrying out the calculation of the scattered light image at binary graduated resolutions, whereby for each image point a number of analysis regions of graduated resolution and surrounding the image point are selected, and beginning with the largest analysis region and the coarsest resolution the scattered light contribution of each analysis region to the inwardly next analysis region with the next finer resolution is calculated, and the scattered light contribution at the highest resolution is only calculated for the innermost analysis region

34. Device according to claim 33, wherein the data processing means is constructed for calculating the scattered light contributions of the individual analysis regions by way of scattered light correction coefficients, whereby each level of resolution is associated with its own set of

scattered light coefficients and the scattered light coefficients of each level of resolution describe those scattered light portions which are received by one image point of the respective level of resolution receives from the other image points of the same level of resolution.

35 Device according to claim 34, wherein the data processing means is constructed for calculating the scattered light contributions of the individual analysis regions by way of calibrated scattered light correction coefficients, whereby the sets of scattered light coefficients each associated with one level of resolution are weighted by a calibration factor and the calibration factors are selected such that a residual error remaining after the scattered light correction is minimal

36 Device according to claim 1, wherein the data processing means is constructed for carrying out a white normalisation, whereby the measured data of the measured object are normalized to the brightness values of a white reference field.

37. Device according to claim 1, wherein the data processing means is constructed for carrying out a white border normalisation, whereby for each measurement the brightness of a white border region is determined and the measured data are normalized to the mean brightness of this border region

38. Device according to claim 1, wherein the data processing means is constructed for carrying out a spectral correction for consideration of the spectral characteristic of interference filters depending on the angle of incidence of the light beams.

39. Device according to claim 38, wherein an interpolation matrix is stored in the data processing means respectively for a preselected number of angles of incidence, the data processing means are constructed for assigning a discrete angle of incidence to each image point on the basis of its relative location on the measured object, and for correcting the spectrum of the respective image point formed by the measured data, by way of the interpolation matrix respectively associated with the discrete angle of incidence.